Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration, wherein the ~~bioreactor is adapted for systemic delivery of the bioactive agent~~biocompatible substance is a biological matrix selected from the group consisting of: a polysaccharide, a PVA sponge, and a lactic acid/glycolic acid polymer.

2. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the cell growth stimulating agent is selected from the group consisting of: a mutated FGF, a transcription factor, ~~a chemotactic factor, an angiogenic factor, an antisense molecule, a ribozyme~~ an anti-apoptotic molecule, an insulin like growth factor (IGF) family member, a vascular endothelial growth factor (VEGF) family member, a colony stimulating factor (CSF) family member, an angiopoietin family member, and an interleukin family member. ~~a growth factor, a cytokine, an extracellular matrix molecule, a cell adhesion protein, a cell retention agent, and a cell surface receptor~~.

3-15. (Canceled)

16. (Original): The bioreactor of claim 2, wherein the cell growth stimulating agent is an anti-apoptotic agent.

17. (Original): The bioreactor of claim 16, wherein the anti-apoptotic agent is Bcl-2.

18. (Original): The bioreactor of claim 16, wherein the anti-apoptotic agent is Bcl-xL.

19. (Original): The bioreactor of claim 16, wherein the anti-apoptotic agent is A20.

20. (Original): The bioreactor of claim 2, wherein the tissue growth stimulating factor is a transcription factor.

21. (Original): The bioreactor of claim 20, wherein the transcription factor is an activator or a repressor.

22. (Original): The bioreactor of claim 21, wherein the transcription factor is selected from the group consisting of: NF-κB, E2F, DP1, AP-1, AP-2, myc, p53, Sp1, NFAT, CBP, C/EBP, and nuclear hormone receptor family members.

23. (Currently Amended): The bioreactor of claim ~~1~~2, wherein the bioreactor further comprises a cell retention agent.

24. (Currently Amendedl): The bioreactor of claim ~~1~~2, wherein the bioreactor further comprises a nucleic acid encoding a cell retention agent.

25. (Original): The bioreactor of claims 23 or 24, wherein the cell retention agent is selected from the group consisting of: macrophage migration inhibitory factor (MIF), extracellular matrix molecules, and cell adhesion molecules.

26. (Canceled)

27. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 26~~, wherein the bioactive agent is a hormone ~~is~~ selected from the group consisting of: growth hormone, insulin, atrial natriuretic peptide (ANP), luteinizing hormone, follicle-stimulating hormone, releasing hormones, inhibin, relaxin, activin, and follitropin.

28. (Original): The bioreactor of claim 27, wherein the hormone is insulin.

29. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the second nucleic acid molecule encodes a bioactive agent selected from the group consisting of: Factor V (FV), Factor VII (FVII), Factor VIII (FVIII), Factor IX (FIX), Factor X, (FX), Factor XI (FXI), Factor XIII (FXIII), erythropoietin (EPO), growth hormone (GH), adenosine deaminase, thrombopoietin, purine nucleoside phosphorylase (PNP), Protein C, Protein S, an interleukin, an interferon, a globin, an antibody, and an antibody fragment.

30. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the second nucleic acid molecule encodes a fibrinolytic agent.

31. (Original): The bioreactor of claim 30, wherein the fibrinolytic agent is selected from the group consisting of: tissue plasminogen activator, plasminogen, plasmin, urokinase, and streptokinase.

32. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the second nucleic acid molecule encodes an anticoagulant.

33. (Original): The bioreactor of claim 32, wherein the anticoagulant is selected from the group consisting of: thrombomodulin, Protein C activating agents, Protein C, and antithrombin.

34. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the second nucleic acid encodes a coagulant.

35. (Original): The bioreactor of claim 34, wherein the coagulant is selected from the group consisting of: thrombin, fibrinogen, fibrin stabilizing factor, Factor IX, Factor VIII, von Willebrand factor, and Factor X.

36. (Previously Presented): The bioreactor of claim 35, wherein the coagulant is Factor IX.

37. (Original): The bioreactor of claim 29, wherein the second nucleic acid molecule encodes FVIII.

38. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 29~~, wherein the second nucleic acid molecule encodes EPO.

39-43. (Canceled)

44. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein the nucleic acid molecule is associated with a condensing agent.

45. (Original): The bioreactor of claim 44, wherein the condensing agent is a polycationic agent.

46. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration~~The bioreactor of claim 1~~, wherein at least one nucleic acid molecule is associated with a cell surface binding moiety.

47. (Original): The bioreactor of claim 46, wherein the binding moiety is a polypeptide reactive with a fibroblast growth factor receptor.

48. (Currently Amended): The bioreactor of claim ~~46~~47, wherein the polypeptide reactive with an FGF receptor is selected from the group consisting of FGF-1, FGF-2, FGF-3, FGF-4, FGF-5, FGF-6, FGF-7, FGF-8, FGF-9, FGF-10, FGF-11, FGF-12, FGF-13, FGF-14, FGF-15, FGF-16, FGF-17, FGF-18, FGF-19, FGF-20, and FGF-21 or fragments thereof that bind to an FGF receptor.

49-55. (Canceled)

56. (Presently Amended): The bioreactor of claim ~~51~~1, wherein the polysaccharides are selected from the group consisting of chitosan, alginate, dextran, hyaluronic acid, and cellulose.

57-67. (Canceled)

68. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration,~~The bioreactor of claim 67~~, wherein the biocompatible substance is a lactic acid/glycolic acid polymer.

69-70.

71. (Currently Amended): An in situ bioreactor, comprising a first nucleic acid molecule encoding a cell growth stimulating agent, a second nucleic acid molecule encoding a bioactive agent, and a biocompatible substance capable of cellular infiltration,~~The bioreactor of claim 69,~~ wherein the biocompatible substance is associated with an implantable device containings expanded polytetrafluoroethylene (ePTFE) or Dacron.

72-102. (Cancelled)

103. (Currently Amended): A kit for the production of a device, comprising:

a) an appropriate container,

b) a biocompatible substance,

c) a first nucleic acid molecule encoding a cell growth stimulating agent; and

d) a second nucleic acid molecule encoding a bioactive agent,

wherein the cell growth stimulating agent is selected from the group consisting of: a mutated FGF, a transcription factor, an anti-apoptotic molecule, an insulin like growth factor (IGF) family member, a vascular endothelial growth factor (VEGF) family member, a colony

stimulating factor (CSF) family member, an angiopoietin family member, and an interleukin family member.

104. (Currently Amended): A kit for the production of a coated device, comprising:

a) a device coated with a biocompatible substance,

b) a first nucleic acid molecule encoding a growth stimulating agent; and

c) a second nucleic acid molecule encoding a bioactive agent,

wherein the ~~device is adapted for systemic delivery of the bioactive agent~~cell growth stimulating agent is selected from the group consisting of: a mutated FGF, a transcription factor, an anti-apoptotic molecule, an insulin like growth factor (IGF) family member, a vascular endothelial growth factor (VEGF) family member, a colony stimulating factor (CSF) family member, an angiopoietin family member, and an interleukin family member.

105. (New): The bioreactor of claim 2, wherein the mutated FGF is an FGF in which one or more cysteine residues is substituted by a serine residue.